CU Engineering Highlights

http://engineering.colorado.edu

University of Colorado:
    CU – Boulder (founded 1876)
    CU – Colorado Springs
    CU – Denver & Health Sciences Center

Presentation to the Engineering Advisory Council on 10/19/07 by
    Robert H. Davis, Dean, College of Engineering & Applied Science

216 faculty
2914 ugrads
1206 grad students
6 departments
19 public ugrad rank
23 public grad rank
CU Engineering Values

- Excellence in both education & research
- Innovative & interactive discovery & learning

Design-Build-Fly Team
7th place finish

Diverse & global perspectives
- Female freshmen increased from 79 to 143 in 4 years
- Minority freshmen increased from 32 to 58 in 4 years
- Ranked 6th in nation by NACME for minority retention
- Female faculty increased from 11% to 16% in 4 years
- International certificate & exchange programs
I hear . . . I forget,
I see . . . I remember,
I do . . . I understand.

Confucius, 500 BC

Hands-on Learning

Solar Decathlon

K-12 Outreach

Engineers Without Borders
Integrated Teaching and Learning Laboratory (ITLL)
- Opened in 1997
- Hands-on engineering education
- Emphasis on projects and teamwork
- K-12 outreach
- Building as lab

Discovery Learning Center (DLC)
- Opened in October 2002
- Research-based learning
- Vertical integration of undergraduates, graduate students, faculty, and industry
Education & Outreach
Highlights

National Leader in K-12 Outreach
- Elementary, Middle & High Schools
- TeachEngineering Digital Library
- Rural Engineering Education

Extracurricular Enrichment Experiences
- Discovery Learning (737 students in FY06-07)
- Service Learning (350 students in FY06-07)
- Professional Learning (359 students in FY06-07)
Undergraduate Enrollments

<table>
<thead>
<tr>
<th>Year (Fall)</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td># applied</td>
<td>2630</td>
<td>2599</td>
<td>2474</td>
<td>2679</td>
<td>3173</td>
</tr>
<tr>
<td>% admitted</td>
<td>73%</td>
<td>75%</td>
<td>72%</td>
<td>67%</td>
<td>64%</td>
</tr>
<tr>
<td># enrolled</td>
<td>610</td>
<td>633</td>
<td>669</td>
<td>654</td>
<td>731</td>
</tr>
<tr>
<td>% women</td>
<td>14%</td>
<td>17%</td>
<td>18%</td>
<td>18%</td>
<td>22%</td>
</tr>
<tr>
<td>% URM</td>
<td>5.7%</td>
<td>7.2%</td>
<td>9.0%</td>
<td>7.5%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Avg HS gpa</td>
<td>3.69</td>
<td>3.72</td>
<td>3.71</td>
<td>3.75</td>
<td>3.79</td>
</tr>
<tr>
<td>Avg ACT</td>
<td>27.3</td>
<td>27.5</td>
<td>27.3</td>
<td>27.8</td>
<td>28.0</td>
</tr>
<tr>
<td>Tot. enrolled</td>
<td>2667</td>
<td>2736</td>
<td>2739</td>
<td>2755</td>
<td>2914</td>
</tr>
</tbody>
</table>

Goals: Increased quality & diversity
## New Undergraduate Programs

<table>
<thead>
<tr>
<th>Year (Fall)</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem &amp; Bio Engr</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>89</td>
</tr>
<tr>
<td>Engr Honors</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>69</td>
</tr>
<tr>
<td>Earn-Learn</td>
<td>27</td>
<td>59</td>
<td>73</td>
<td>79</td>
</tr>
<tr>
<td>Discovery Learning</td>
<td>12</td>
<td>23</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>
Graduate Enrollments

<table>
<thead>
<tr>
<th>Year (Fall)</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td># applied</td>
<td>2087</td>
<td>1666</td>
<td>1358</td>
<td>1477</td>
<td>1681</td>
</tr>
<tr>
<td>% admitted</td>
<td>55%</td>
<td>56%</td>
<td>62%</td>
<td>61%</td>
<td>58%</td>
</tr>
<tr>
<td># new enrolled</td>
<td>269</td>
<td>240</td>
<td>221</td>
<td>242</td>
<td>247</td>
</tr>
<tr>
<td>Avg. quant. GRE</td>
<td>742</td>
<td>745</td>
<td>741</td>
<td>751</td>
<td>752</td>
</tr>
<tr>
<td>Reg. MS stud.</td>
<td>461</td>
<td>461</td>
<td>399</td>
<td>388</td>
<td>382</td>
</tr>
<tr>
<td>Reg. PhD stud.</td>
<td>485</td>
<td>500</td>
<td>491</td>
<td>488</td>
<td>493</td>
</tr>
<tr>
<td>% women</td>
<td>24%</td>
<td>22%</td>
<td>23%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>% URM</td>
<td>5.0%</td>
<td>5.6%</td>
<td>4.4%</td>
<td>5.4%</td>
<td>5.0%</td>
</tr>
<tr>
<td>% foreign</td>
<td>35%</td>
<td>30%</td>
<td>28%</td>
<td>31%</td>
<td>29%</td>
</tr>
<tr>
<td>Prof. MS stud.</td>
<td>383</td>
<td>281</td>
<td>244</td>
<td>283</td>
<td>331</td>
</tr>
</tbody>
</table>

Goals: Increased quality, diversity and #PhD students
## Research: Grant Funding

<table>
<thead>
<tr>
<th>Year</th>
<th>FY02</th>
<th>FY03</th>
<th>FY04</th>
<th>FY05</th>
<th>FY06</th>
<th>FY07</th>
</tr>
</thead>
<tbody>
<tr>
<td># proposals</td>
<td>528</td>
<td>554</td>
<td>577</td>
<td>553</td>
<td>478</td>
<td>507</td>
</tr>
<tr>
<td>$ requested</td>
<td>235M</td>
<td>274M</td>
<td>274M</td>
<td>255M</td>
<td>137M</td>
<td>223M</td>
</tr>
<tr>
<td>$ awarded</td>
<td>38.7M</td>
<td>37.5M</td>
<td>42.8M</td>
<td>39.1M</td>
<td>34.8M</td>
<td>40.3M</td>
</tr>
<tr>
<td>$ industry</td>
<td>3.5 M</td>
<td>4.2 M</td>
<td>4.7 M</td>
<td>6.4 M</td>
<td>7.0 M</td>
<td>9.5 M</td>
</tr>
</tbody>
</table>

**Goals:**
New partnerships, increased submissions & awards
1. Center for Fast Hybrid Testing (FHT)
   Director: Victor Saoumo  Funding: NEES, Inc. (NSF)
2. Center for Integrated Micro/nano-electromechanical Transducers (iMINT)
   Director: Y.C. Lee  Funding: DARPA, industry
3. Colorado Center for Biorefining & Biofuels
   Director: Al Weimer
   Funding: industry, state of CO
New Faculty in AY07-08

Aerospace Engr. Sci.
Mahmoud Hussein, Asst. Prof.
Hanspeter Schaub, Asst. Prof.
Ryan Starkey, Asst. Prof.

Charles Nuttelman, Instructor
Amy Poshusta, Instructor
Aaron Saunders, Asst. Prof.
Mark Stykovich, Asst. Prof.

Civ., Env. & Arch. Engr.
Karl Linden, Prof.
Keith Porter, Assoc. Res. Prof.
Brent Protzman, Asst. Prof.
Sandra Vasconez, Sr. Inst.
Frank Vernerey, Asst. Prof.
Bill Yearsley, Sr. Inst.

Elec. & Comp. Engr.
Aaron Bradley, Asst. Prof.
Li Shang, Asst. Prof.
Jeremy Siek, Asst. Prof.

Engr. Management
Steven Ouillette, Instructor

Herbst Humanities Prog.
Corey Abel, Lecturer
Erik Dempsey, Lecturer

Mechanical Engineering
Mike Hannigan, Asst. Prof.
Daria Kotys-Schwartz, Inst.
Se-Hee Lee, Assoc Prof.
Harold Park, Asst. Prof.

36 tenure-track hires, including 9 women & 11 minorities, in 4 years
NSF CAREER Awards

Xinzhao Chu
AES

Olgica Milenkovic
ECE

Jerri Qi
ME

Harold Park
ME
Selected Faculty Awards

Chris Bowman, ChBE
AIChE Wilhelm Award
ACS Coop. Res. Award

Ross Corotis, CEAE
Jefferson Fellow

Andrzej Ehrenfeucht, CS
CU Distinguished Prof.

Gerhard Fischer, CS
Computer-Human Interaction Award
Selected Faculty Awards

Al Gasiewski, ECE
NOAA Bronze Medal

Robin Shandas, ME
NIH Mid-Career Award

Bernard Amadei, CEAE
Hoover Medal
Heinz Award

Donna Gerran, AES
AIAA Faculty Adv. Award
Boeing Welliver Fellow
Financial Update

FY07 Expenditures: $70.6M

- Grant Funds: 50.0%
- State Appropriated Funds: 6.5%
- Auxiliary Funds: 3.7%
- Gift Funds: 6.4%
- Indirect Cost From Grants: 4.0%
- Tuition: 29.4%
<table>
<thead>
<tr>
<th>Year</th>
<th>FY03</th>
<th>FY04</th>
<th>FY05</th>
<th>FY06</th>
<th>FY07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Comm.</td>
<td>$3.1M</td>
<td>$5.1M</td>
<td>$4.2M</td>
<td>$6.5M</td>
<td>$5.2M</td>
</tr>
<tr>
<td>Private Cash</td>
<td>$3.9M</td>
<td>$3.7M</td>
<td>$4.7M</td>
<td>$5.7M</td>
<td>$2.9M</td>
</tr>
<tr>
<td>Dean’s Fund</td>
<td>$232K</td>
<td>$297K</td>
<td>$297K</td>
<td>$361K</td>
<td>$352K</td>
</tr>
<tr>
<td>Cont. Gen. Fund</td>
<td>$23.2M</td>
<td>$24.5M</td>
<td>$25.9M</td>
<td>$27.4M</td>
<td>$30.0M</td>
</tr>
<tr>
<td>Grants Received</td>
<td>$37.5M</td>
<td>$42.8M</td>
<td>$39.1M</td>
<td>$34.8M</td>
<td>$40.3M</td>
</tr>
<tr>
<td>Res. Ugrad. Tuit.</td>
<td>$3852</td>
<td>$4582</td>
<td>$5850</td>
<td>$5994</td>
<td>$7498</td>
</tr>
<tr>
<td>Nonres. Ugrad. Tuit.</td>
<td>$20,418</td>
<td>$21,834</td>
<td>$23,220</td>
<td>$23,800</td>
<td>$25,290</td>
</tr>
</tbody>
</table>
Investment in CU-Engineering (I-CUE):
Excellence in education & research,
with increased quality & diversity,
by investment in strategic initiatives

Funding Sources:
• College resources
• Campus requests
• Private funding
4 initiatives selected (Aug. 2006)
• K-12 Partnerships (DSST, Lafayette)
• Energy Resources & Efficiency
• Materials Science & Engineering
• Space Systems Science & Engineering

College funds allocated:
$0.3M FY07
$1.2M FY08
$1.5M match

Campus funds allocated:
$0.3M FY07
$1.0M FY08 req.
Private Fundraising

If your vision is for one year, plant wheat.
If your vision is for ten years, plant trees.
If your vision is for a lifetime, plant people.

- Old Chinese Proverb

- Undergraduate scholarships (1:1)
- Graduate fellowships (3:2)
- Student apprenticeships (1:1)
- Faculty fellowships (3:2)

Progress to-date: (7/1/06 – 10/16/07)

EAC & RDC members: $288K
Alumni & friends: $402K
Corporations & foundations: $392K
Faculty, staff & depts: $  56K
$1138K